

PBL

Imagine that gravity cease to exist. What consequences would it have for living beings? And for the Earth and the rest of the planets?



1. What would happen to the Universe?

We will now travel through the outer space to end up in our planet and analyse what would happen if something came and cause gravity's force to vanish. In case a spatial phenomenon caused the lack of gravity and making every star and planet start moving down we wouldn't be able to appreciate it because they are too far from us.

The lack of gravity arrives to the sun and explodes because of the incapacity of maintain himself together. The high pressures would make its nucleus explode. In the earth we wouldn't have noticed yet because light takes 8 minutes to get from the sun to the earth.

Suddenly, the moment has arrived. Gravity stops in the earth. In that exact moment we would see the sun explode and everything would start flying in the air up to the sky. Anything that was not hold to something would fly away immediately. Millions of people, things and animals would precipitate into the outer space.

The earth would start to evaporate within seconds and the oceans would start to disappear. Within minutes the half of our oceans would have disappeared and the atmosphere with it. Everything would vanish in the space almost instantly. Only people at their homes would resist a little bit more given that the buildings are engaged with the ground.

Planets would decompose little by little. First the smallest ones and then the bigger ones. Jupiter, Saturn, Uranus and Neptune would lose their external layers till the nucleus shows up and later decomposes.

At last, big chunks of earth would fall apart from the planets and there wouldn't be accumulations of matter like stars or planets at any point of the universe. Galaxys would start to disappear until they completely vanish.

In the end there would be a soup of atoms and molecules floating to nowhere.

But keep calm. Gravity is only one of the fundamental forces of the Universe, one of those four forces of the Universe, which are: the weak nuclear force, the strong nuclear force, gravity and the electromagnetism. Let's say they are the laws that God displayed over his table to create everything and unless he gets really mad we will still have them.

2. What would happen to the Earth?

Gravity is one of those things we take completely for granted. And there are two things about it that we take for granted: the fact that it is always there, and the fact that it never changes. If the Earth's gravity were ever to change significantly, it would have a huge effect on nearly everything because so many things are designed around the current state of gravity.

Before looking at changes in gravity however, it is helpful to first understand what gravity is. Gravity is an attractive force between any two atoms.

The reason why gravity on Earth never changes is because the mass of the Earth never changes. The only way to suddenly change the gravity on Earth would be to change the mass of the planet. A change in mass great enough to result in a change in gravity isn't going to happen anytime soon.

But let's ignore the physics and imagine that, one day, the planet's gravity turned off, and suddenly there was no force of gravity on planet Earth.

We depend on gravity to hold so many things down (cars, people, furniture, pencils and papers on your desk, and so on). Everything not stuck in place would suddenly have no reason to stay down, it would start floating. But it's not just furniture and the like that would start to float. Two of the more important things held on the ground by gravity are the atmosphere and the water in the oceans, lakes and rivers. Without gravity, the air in the atmosphere has no reason to hang around, and it would immediately leap into space. This is the problem the moon has (the moon doesn't have enough gravity to keep an atmosphere around it, so it's in a near vacuum). Without an atmosphere, any living thing would die immediately and everything liquid would boil away into space.

In other words, no one would last long if the planet didn't have gravity.

3. What would happen to living beings?

Physical effects:

Even though the body would continue working in the same way, the liquids of our body, instead of going to the legs by their own weight, would distribute in a different way: the same amount in the higher and in the lower parts of the body due to the ingravity. This affects to our physiology and senses.

Effects in our senses:

Vision: there would be an increase in the ocular pressure, more liquid in the head and in the torso producing a meaningful improvement in the vision. Some astronauts affirm they have seen objects moving in the Earth! But the first minutes the vision would be blurred.

Smell: the redistribution of liquids may cause a state of nasal congestion, provoking a smell loss and a voice change of tone.

Hearing: In the first moment there is a conflict in the orientation because the ingravity in the internal hearing causes confusion, dizziness, vomits, etc.

Touch: the touch receptors do not perceive as in the Earth. That is the reason why astronauts cannot take small objects.

Taste: the diffusion problems cause difficulties in the perception of flavours.

Physiological effects:

The liquid excess in the higher part of our body origins dehydration. This causes a red blood cells decrease



Lungs are also affected because they can flood. But the most dangerous is that ingravity can cause a heart increase, but this only lasts about 3 or 4 weeks, when the heart stops increasing. Bones do not have to support weight any longer, so there is a decrease in the bones and muscles mass.

Psychological effects:

General discomfort: Obviously, the introduction in such a different environment, the body shows signs of rejection causing general discomfort. At this point we can see the first psychological changes caused by the state of weightlessness.



Euphoria: Once shaped to this initial situation, the astronaut goes through a state of euphoria. The feeling of being 'king of the world' is present in all those who have travelled to space. It is a state of great satisfaction and joy.

Loneliness: As time passes, astronaut begins to immerse themselves in depressive states and great boredom. They become irritable due to confinement in such a small space as it is the ship. Every day he sees the same partners, same faces, environment... and over working hours and hours and hours.

There may also be special situations, where the astronauts on the mission lost a relative on Earth, "workplace" accidents during the mission or the inability to complete the mission successfully, which can affect your mood and psychological state.